

# Understanding Basic Concept of Electrical and Electronic Systems

Asadullah Shah



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# **UNDERSTANDING BASIC CONCEPT OF ELECTRICAL AND ELECTRONIC SYSTEMS**

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**Editors**

Asadullah Shah



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# 28. ACTIVE LOW PASS FILTER

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## 28.0 Abstract:

As their name implies, **Active Filters** contain active components such as operational amplifiers, transistors or FET's within their circuit design over the passive filters (R, L and C element only). The op-amp provide the gain, so the signal is not attenuated as it passes through the filter. The high input impedance of the op-amp prevents excessive loading of the driving source, and the low output impedance of the op-amp prevents the filter from being affected by the load that it is driving. It will pass the low frequency signals and stop the high frequency signals.

## 28.1 Description:

In the RC Passive Filter 1st-Order filter circuits, such as the Low Pass and the High Pass filters can be made using just a single resistor and a non-polarized capacitor connected in series across a sinusoidal input signal. We also noticed that the main disadvantage of passive filters is that the amplitude of the output signal is less than that of the input signal, ie, the gain is never greater than 1. With filter circuits containing multiple order stages, this loss in amplitude called "Attenuation" can become quite severe. One way of restoring or controlling this loss of signal is by amplification through the use of